Anticipated acquisition by Électricité de France SA of the Nuclear Steam Power Business owned by the General Electric Company

Decision on relevant merger situation and substantial lessening of competition

ME/7024/22

The CMA's decision on reference under section 33(1) of the Enterprise Act 2002 given on 25 May 2023. Full text of the decision published on 26 June 2023.

Please note that [✂] indicates figures or text which have been deleted or replaced in ranges at the request of the parties or third parties for reasons of commercial confidentiality.

SUMMARY

1. Électricité de France SA (**EDF**) has agreed to acquire the nuclear steam power business (**GE Steam**) owned by the General Electric Company (**GE**) (the **Merger**). EDF, GE and GE Steam are together referred to as the **Parties**, and for statements relating to the future, EDF and GE Steam are referred to as the **Merged Entity**.

2. The Parties are active in the nuclear energy sector, although they undertake different activities within it. EDF develops and operates nuclear power plants in the UK and globally, including the design and construction of nuclear reactors and islands. Nuclear power plants have what is known as nuclear islands (where the process of nuclear fission occurs) and conventional islands (where the steam generated by nuclear fission is converted to electricity via turbines). GE Steam

develops and manufactures the components of conventional islands for nuclear power plants (in particular, steam turbine and generator packages or **TGPs**), and provides servicing for these.

3. The Competition and Markets Authority (**CMA**) has assessed three principal theories of harm:

   (a) Input foreclosure in the supply of TGPs to nuclear reactor suppliers;

   (b) Customer foreclosure in the supply of TGPs to nuclear reactor providers; and

   (c) Customer foreclosure of steam turbine and generator servicing suppliers.

4. In relation to the TGP input foreclosure theory of harm, the CMA considered whether the Merged Entity would have the ability to harm nuclear reactor developers from entering the UK and competing against EDF by charging a higher price or reducing the quality of TGPs, or refusing to supply TGPs, for (a) high-power reactors (above 500MW) and (b) small modular reactors (less than 500MW) (**SMR**), leading to a substantial lessening of competition (**SLC**) in the market for the global design and construction of nuclear islands.

5. The CMA found that the Merged Entity would not be able to restrict the supply of TGPs to EDF's rivals since sufficient competition in the supply of TGPs would remain after the Merger. For high-power reactors, rivals would have access to TGPs from Doosan-Skoda, Mitsubishi Heavy Industries (**MHI**), Toshiba and Siemens. For SMRs, rivals would have access to TGPs from those same suppliers as well as a range of smaller suppliers such as Ansaldo and others. Therefore, the CMA found that the Merged Entity would not have the ability to harm the overall competitiveness of its rivals in the design and construction of nuclear islands. Therefore, there is no realistic prospect of the Merger giving rise to an SLC on this basis.

6. In relation to the TGP customer foreclosure theory of harm, the CMA assessed the extent to which the Merged Entity could harm GE Steam's rival TGP suppliers by restricting their access to EDF as a customer on a worldwide basis. The CMA found that EDF is not a sufficiently important customer to TGP suppliers given EDF has a small share in the design and construction of nuclear power plants worldwide (its worldwide share is [0-5]%) and, in any case, EDF currently mainly uses GE Steam as its supplier. Therefore, there is no realistic prospect of the Merger giving rise to an SLC on this basis.

7. In relation to the servicing customer foreclosure theory of harm, the CMA considered whether the Merged Entity would have the ability to foreclose rival steam turbine and generator servicing providers by restricting access to EDF as a customer, leading to a SLC in the markets for the supply of servicing for (a) steam turbines and (b) generators in the conventional island in nuclear power plants in Europe.

8. The CMA found that EDF was not an important customer for GE Steam's rivals in steam turbine and generator servicing given that:

   (a) While EDF is the largest nuclear power plant operator in Europe with a [50-60]% share, based on the available evidence, EDF is not a customer that GE Steam's rivals depend on; and

   (b) Rival steam turbine and generator servicing suppliers are able to and currently do provide servicing to non-nuclear power plants.

9. The CMA found that the Merged Entity would not have the ability to harm the overall competitiveness of its rivals in the supply of steam turbine and generator servicing. Therefore, there is no realistic prospect of the Merger giving rise to an SLC on this basis.

10. The CMA therefore believes that the Merger does not give rise to a realistic prospect of an SLC as a result of vertical effects in relation to the supply of TGPs for (a) high-power reactors and (b) SMRs globally and the supply of servicing for (a) steam turbines and (b) generators in nuclear power plants in Europe.

11. The Merger will therefore not be referred under section 33(1) of the Act.

12. The CMA gathered a range of evidence during its investigation to reach this position. After receiving waivers from the Parties, the CMA engaged extensively with relevant UK government departments and regulators. It also held market inquiry calls with a number of third-party industry participants, and received questionnaire responses from several TGP customers and competitors, as well as other businesses active in the supply chain. The CMA also considered a broad range of information and internal documents provided by the Parties.

ASSESSMENT

Parties and transaction

13. EDF and its subsidiaries (**EDF Group**) are active in the global generation, wholesale trading, transmission, distribution and retail supply of electricity via fuel sources such as nuclear, renewables and fossil fuels (ie gas, coal, oil).[1] In the civil nuclear sector, EDF (through its subsidiary Framatome) is active worldwide in the design and construction of nuclear islands and operates all the existing nuclear power plants in the UK and France.[2] The EDF Group is active in the nuclear defence sector through its interest in Framatome Defense and has a limited presence in the

[1] Final Merger Notice submitted by the Parties on 11 April 2023 (**FMN)**, paragraph 48.
[2] FMN, paragraph 10.

UK through the Capula Group.[3] The turnover of the EDF Group in 2022 was approximately £122 billion worldwide and approximately £[✂] in the UK.[4]

14. GE Steam is active in:[5]

    (a) the worldwide development and manufacturing of the components of nuclear conventional islands (including the supply of TGPs);[6] GE will retain its interest in GE-Hitachi Nuclear Energy, a lifecycle provider for reactor islands;[7]

    (b) the worldwide supply (excluding the Americas) of services to GE Steam's nuclear conventional islands installed base and associated equipment of other OEMs; and

    (c) the supply of turbines and related servicing for British nuclear submarines.

15. The turnover of GE Steam in 2022 was approximately £[✂] worldwide and approximately £[✂] in the UK.[8]

16. EDF and GE entered a Sale and Purchase Agreement on 4 November 2022, pursuant to which EDF will acquire 100% of the shares of GE Steam after it has been carved out of GE.[9] The Merger consideration is US $[✂] (approximately £[✂]).[10]

17. The Parties informed the CMA that the Merger is subject to review by competition authorities in France, Finland, Russia, South Africa, Morocco and Ukraine.[11] The Merger was cleared in Morocco, Ukraine, South Africa and France. The Merger remains subject to review in Finland and Russia.

Jurisdiction

18. Each of EDF and GE Steam is an enterprise.[12] As a result of the Merger, these enterprises will cease to be distinct.

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[3] FMN, paragraph 10.
[4] Parties' response to the CMA's request for information dated 16 May 2023, paragraph 1.1.
[5] FMN, paragraphs 1 and 51.
[6] GE Steam also supplies components such as pumps, condensers and moisture separator heaters and associated instrumentation and control systems to conventional islands.
[7] See GE Signs an Exclusive Agreement to Sell Part of Steam Power's Nuclear Activities to EDF | GE News.
[8] Parties' response to the CMA's request for information dated 16 May 2023, paragraph 1.1.
[9] FMN, paragraph 30. In the UK, EDF will acquire GE Steam's UK activities (including the supply of turbines and related servicing designed for British nuclear submarines), which are held by [✂]. EDF plans to make this acquisition via a new company, [✂], which will be a wholly-owned subsidiary of EDF Energy Holdings Ltd.
[10] FMN, paragraph 34. The Merger consideration value has been converted from US Dollar to Pound Sterling based on the Bank of England's annual average spot exchange rate for 2022 of 0.8089.
[11] FMN, paragraph 45.
[12] The CMA treated EDF as the ultimate parent enterprise for the purposes of its jurisdictional assessment. For the purposes of its competitive assessment, the CMA also considered potential competitive interactions resulting from entities that could exercise material influence over EDF.

19. The UK turnover of GE Steam exceeds £70 million, so the turnover test in section 23(1)(b) of the Enterprise Act 2002 (the **Act**) is satisfied.

20. The CMA therefore believes that it is or may be the case that arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation.

21. The initial period for consideration of the Merger under section 34ZA(3) of the Act started on 11 April 2023 and the statutory 40 working day deadline for a decision is therefore 8 June 2023.

Counterfactual

22. The CMA assesses a merger's impact relative to the situation that would prevail absent the merger (ie the counterfactual).

23. The Parties submitted that the relevant counterfactual against which to assess the Merger is the prevailing conditions of competition.[11] In conducting this assessment in line with paragraph 3.12 of the CMA's Merger Assessment Guidelines, the CMA found that in this case, there is no evidence supporting an alternative counterfactual to the prevailing conditions of competition, and the Parties and third parties have not put forward arguments in this respect. Therefore, the CMA believes the prevailing conditions of competition to be the relevant counterfactual.[13]

Background

Nuclear island and conventional island of nuclear power plants

24. The process of generating electricity through nuclear power plants relies on two key parts of the plant: (i) the nuclear island and (ii) the conventional island. Nuclear power plants generate electricity by using the heat produced through nuclear fission within the nuclear reactor to produce steam (this part of the power plant is referred to as the **nuclear island**).[14] The steam is used to spin TGPs that generate electricity (this part of the nuclear power plant is referred to as the **conventional island**).[15]

25. As an operator of nuclear power plants, EDF is a generator and wholesale supplier of electricity and therefore requires the steam turbines and generators in operation at its plants to be serviced.

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[13] CMA's Merger Assessment Guidelines (**CMA129**), March 2021, paragraph 3.12.
[14] The nuclear island, where the fission reactions continuously take place, comprises (a) the NSSS; (b) the balance of nuclear island (BNI); and (c) civil engineering facilities within which the equipment and systems are installed. FMN, paragraph 81.
[15] The conventional island, where thermal energy is converted to electrical energy via TGPs, comprises of (a) TGP (consisting of a combination of a turbine and a generator) and (b) the moisture separator reheater. FMN, paragraph 81. See What is Nuclear Energy? - Nuclear Industry Association (niauk.org); Nuclear energy: What you need to know - GOV.UK; FMN, paragraph 81(a) and (b).

Emerging small modular reactor technology

26. The CMA understands that SMRs are compact nuclear reactors which can produce up to around 500MW of electricity. The Parties submitted that some countries have expressed an interest in developing SMRs (including Canada, the Czech Republic, Poland and Romania), these reactors are largely still under development and are not expected to be commercially viable in the UK well into the 2030s at the earliest.[16] SMRs have received increasing interest from the global nuclear industry due to their small size and modular construction which, according to the Parties, has the potential to resolve fundamental issues relating to traditional forms of nuclear reactors.[17]

Nuclear energy: the landscape in the UK

27. There are currently five operating nuclear power plants in the UK, out of which four are advanced gas-cooled reactors (**AGR**) and one, Sizewell B, is a pressurised water reactor (**PWR**). The four AGRs are due to be decommissioned by 2028 while Sizewell B is due to be decommissioned in 2035 (unless its life is extended).[18, i]

28. Hinkley Point C (currently under construction) and Sizewell C (construction pending a final financial investment decision) are the only two currently confirmed nuclear new build projects in the UK. The UK government has also designated eight sites for deploying new nuclear power plants in the future.[19] In addition, the UK government has committed to providing up to £210 million to support Rolls-Royce's SMR programme, which do not require large designated sites for deployment.[20]

29. The UK government's ambition, pursuant to its Energy Security Strategy of 2022, is to triple the nuclear energy capacity in the UK to 24GW by 2050 (such that it will represent 25% of Great Britain's projected electricity demand, up from 15% today). It aims to do so by pursuing both traditional large-scale reactors and investment in SMRs and Advanced Modular Reactors.[21] The UK government intends to take one project to its financial investment decision stage during the current Parliament (by 2024) and two during the next Parliament (including SMRs). [22]

30. The UK government has recently launched (and will fund) a new body, Great British Nuclear, to lead the delivery of new nuclear projects in the UK, including SMRs.[23] In addition, the UK government has also launched the Future Nuclear Enabling Fund

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[16] FMN, paragraph 98 and 174.
[17] FMN, paragraph 98 (a); Note of a call with a third party. See also Small Modular Reactors: Challenges and Opportunities (oecd-nea.org).
[18] FMN, paragraph 88, table 3.
[19] These sites are: Hinkley Point, Sizewell, Heysham, Hartlepool, Bradwell, Wylfa, Oldbury and Moorside (Sellafield). FMN, paragraph 104(b).
[20] See UK backs new small nuclear technology with £210 million - GOV.UK.
[21] See The Ten Point Plan for a Green Industrial Revolution, page 12.
[22] See British energy security strategy - GOV.UK.
[23] See Powering Up Britain - Joint Overview.

of up to £120 million to support and address barriers to entry for new nuclear.[24] Further, future nuclear projects are likely to be funded through the nuclear Regulated Asset Base model.[25]

Commissioning of nuclear power plants

31. The process of obtaining various regulatory licences and approvals before construction of a nuclear power plant in the UK can take approximately ten years. This includes, among others, the Generic Design Assessment conducted by the Environment Agency and the Office for Nuclear Regulation.[26]

32. Great British Nuclear will be tasked with supporting nuclear power plant projects (including financially) through every stage of the development process and developing a resilient pipeline of new nuclear power plants.[27] To achieve this and the wider ambitions set out in paragraph 29 and 30, the UK government is encouraging nuclear reactor providers to come forward and compete for projects.[28]

33. Nuclear reactor providers seeking to compete for projects in the UK must work with a provider of conventional islands as part of a project to design and manufacture a nuclear power plant.[29] In some cases, this involves a nuclear reactor provider seeking to source a TGP to be used alongside its nuclear reactor.[30]

Frame of reference

34. Market definition provides a framework for assessing the competitive effects of a merger and involves an element of judgement. The boundaries of the market do not determine the outcome of the analysis of the competitive effects of the merger, as it is recognised that there can be constraints on merging parties from outside the relevant market, segmentation within the relevant market, or other ways in which some constraints are more important than others. The CMA will take these factors into account in its competitive assessment.[31]

35. The CMA has assessed the frames of reference in relation to the Parties' vertical relationships, which involve GE Steam's supply of TGPs and related servicing to EDF in its role as a builder and operator of nuclear power plants. At the outset, the

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[24] See Powering Up Britain - Joint Overview; Future Nuclear Enabling Fund (FNEF) (closed to applications) - GOV.UK.
[25] See Nuclear regulated asset base (RAB) model: statement on procedure and criteria for designation - GOV.UK; UK backs new small nuclear technology with £210 million - GOV.UK.
[26] Through the Generic Design Assessment, the regulators evaluate the nuclear reactor designs and technology before the developer has formed detailed construction plans or applied for licenses or permits. The other required regulatory approvals include (a) environmental and planning approvals or permits from the Secretary of State; (b) safety related licenses; (c) obtaining compliance with the Grid Code from the National Grid; and agreeing on Nuclear Liabilities Fund arrangements with BEIS. Parties' response to the CMA's request for information dated 9 January 2023, paragraphs 11.2-11.3.
[27] See British energy security strategy - GOV.UK.
[28] See British energy security strategy - GOV.UK.
[29] FMN, paragraph 84(a).
[30] Note of a call with a third party.
[31] CMA129, paragraph 9.4.

CMA notes that its approach to frames of reference in this case have been informed by the non-horizontal nature of the relationship between the Parties, and the lack of any need to draw firm boundaries around product or geographic scope in light of the potential foreclosure strategies available to the Merged Entity.

TGPs

Nuclear new builds

Product Scope

36. The Parties submitted that the product frame of reference is either the:

    (a) development of nuclear new builds (**Nuclear Development Market**); or

    (b) design and construction of nuclear islands (**Nuclear Design Market**).[32]

37. The Parties submitted that the Nuclear Development Market is distinct from the Nuclear Design Market and encompasses a broader set of activities, and therefore includes firms which are not nuclear island manufacturers.[33] In relation to the Nuclear Design Market, the Parties submitted that in *EDF / Areva Reactor Business*,[34] the European Commission found that there should be no market segmentation of nuclear islands based on reactor type (eg PWR, AGR), reactor power output or the generation of the reactor.[35] This is because from a demand side perspective, all types of reactor technology have the same output, which is electricity generation.[36]

38. As set out in paragraphs 62 to 64, from the demand side, the CMA considers that providers of nuclear islands of different power outputs compete against each other and provide a competitive constraint on one another. In order to focus on potential foreclosure arising from the vertical relationship in this Merger, the CMA has used the Nuclear Design Market (ie those competitors who would also seek to source a TGP from GE Steam or its competitors) as the most appropriate frame of reference.

Geographic Scope

39. The Parties submitted that the relevant geographic frame of reference for the Nuclear Design Market should be worldwide,[37] pointing to EDF's ability to supply nuclear islands globally, although they acknowledged that some markets are only open to domestic suppliers.[38]

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[32] FMN, paragraph 205.
[33] FMN, paragraph 195.
[34] M.7764 EDF / Areva Reactor Business of 29 May 2017.
[35] FMN, paragraph 200.
[36] FMN, paragraph 201(a).
[37] FMN, paragraphs 199 and 204.
[38] FMN, paragraph 203.

40. The CMA has assessed the Merger on the basis of a global frame of reference, although it has taken into account the likelihood of competitors entering the UK market, as well as any impediments to supplying the UK as part of its competitive assessment.

Supply of TGPs

Product Scope

41. The Parties submitted that the product frame of reference for the supply of TGPs for the conventional island in nuclear power plants should be segmented by power output: very high power (above 1500MW), medium power (500-1500MW) and low power (less than 500MW).[39]

42. The European Commission has previously considered the supply of steam turbines and generators, with a focus on non-nuclear power plants, in *GE / Alstom.*[40] As part of its assessment, the European Commission found separate markets for the supply of large steam turbines in contrast to industrial steam turbines (below 100MW);[41] and that there was a market for generators separate from steam turbines.[42]

43. The Parties' views differed with the European Commission's findings to an extent. The Parties submitted that TGPs for conventional islands in nuclear power plants are sold in a package and not separately,[43] and that segmentation of TGPs based on the three abovementioned power levels was appropriate, given that from the supply side, development, manufacturing and required equipment can differ between the three.[44]

44. The CMA received third-party evidence that confirmed the Parties' submissions that from the demand side, TGPs are generally purchased as a package.[45] However, the CMA received mixed feedback on the Parties' suggested segmentation of TGPs by power level. One third party submitted that SMRs, which are lower power reactors, could potentially use TGPs designed for higher power reactors.[46] Nevertheless, as set out in paragraphs 66 to 72, from the demand side, the CMA considers that suppliers of TGPs for nuclear reactors of different power outputs above 500MW compete against each other and provide a degree of competitive constraint on one another. The CMA considers there is a different segment for the supply of TGPs to SMRs (ie TGPs with a power output below 500MW), given there is likely to be a

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[39] FMN, paragraph 176(a).
[40] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) (***GE / Alstom***) of 8 September 2015.
[41] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1524.
[42] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1461.
[43] FMN, paragraph 180(a).
[44] FMN, paragraph 180.
[45] Note of a call with a third party.
[46] Note of a call with a third party.

different set of competitors. Therefore, the CMA considers it appropriate to assess TGPs as a single product, based on a segmentation between those with a power output above and below 500MW.

Geographic Scope

45. The Parties submitted that the appropriate geographic frame of reference should be worldwide.[47] The CMA considers this an appropriate frame of reference to assess the transaction, including because third parties submitted that TGP suppliers compete with global competitors.[48] Notwithstanding this, the CMA is required to consider the impact of the Merger on competition within any market or markets in the UK.[49] It has taken into account the likelihood of competitors entering the UK market, as well as any impediments to supplying the UK as part of its competitive assessment.

Steam turbine and generator servicing

Supply of steam turbine and generator services

46. The Parties submitted that the product frames of reference should be (a) the supply of servicing to steam turbines in all power plants and (b) the supply of servicing to generators in all power plants. The Parties further submitted that the appropriate geographic frame of reference for both products should be worldwide.[50]

47. In *GE / Alstom*, the European Commission identified separate product markets for each of (a) the servicing of steam turbines in all power plants;[51] and (b) the servicing of generators in all power plants.[52] For each of these separate product markets, the European Commission received third-party evidence that suggested (i) from the demand side, Original Equipment Manufacturers (**OEMs**), which have the ability to service their own steam turbines and generators, also compete with non-OEM service providers from the point at which the steam turbine or generator is sold to a customer,[53] and (ii) from the supply side, a number of service providers could supply the full range of services to all types of steam turbines and generators.[54] The European Commission also received some feedback that servicing of steam turbines for nuclear power plants could be segmented from other power plants, but

[47] FMN, paragraph 189.
[48] Third party responses to the CMA's questionnaire.
[49] The Enterprise Act 2002, section 33(1)(b).
[50] FMN, paragraph 299.
[51] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1770.
[52] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1743.
[53] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraphs 1767 and 1739.
[54] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraphs 1767 and 1739.

left this open.[55] Finally, the European Commission left open whether the geographic scope for steam turbine and generator servicing was EEA wide or worldwide in scope.[56]

48. The CMA has not received evidence to call the European Commission's conclusions on product and geographic frames into question, and considers that they would be appropriate starting points for any detailed assessment. However, the CMA has carried out an assessment of (a) servicing of steam turbines in nuclear power plants and (b) servicing of generators in nuclear power plants together, as a separate assessment would have no impact on its competitive assessment. The CMA considers a geographic frame of reference based on Europe is in line with the European Commission's previous decision and is appropriate, including because of the Parties' feedback supporting regional procurement and pricing.[57] Although, as explained at paragraph 85, a broader global set of alternatives have also been considered where appropriate as part of the competitive assessment.

Operation of nuclear power plants

49. The Parties submitted that the relevant downstream frame of reference is the generation and wholesale supply of electricity within the UK.[58]

50. As set out at paragraphs 86 to 88, the CMA considers that the appropriate frame of reference for a non-horizontal assessment is the operation of nuclear power plants in Europe, as on a cautious basis, the CMA considers that nuclear power plant operators are key customers of steam turbine and generator service providers. When assessing ability to engage in customer foreclosure it is these downstream customers which are most relevant for determining the alternative customers to EDF that suppliers of servicing have.

Conclusion on frames of reference

51. For the reasons above, the CMA has used the following frames of reference for its assessment in this case:

    (a) The design and construction by nuclear reactor providers of nuclear islands worldwide, with a focus on potential entrants into the UK;

    (b) The supply of TGPs to nuclear islands worldwide, with a focus on potential entrants into the UK, segmented by TGPs for high power nuclear reactors (above 500MW) and TGPs for SMRs (less than 500MW);

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[55] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1770.
[56] M.7278 GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS) of 8 September 2015, paragraph 1773.
[57] Parties' response to the CMA's request for information dated 6 April 2023, paragraph 1.4 (**RFI5 response**).
[58] FMN, paragraph 354.

(c) The supply of servicing to steam turbines in the conventional island in nuclear power plants in Europe, as well as the supply of servicing to generators in the conventional island in nuclear power plants in Europe; and

(d) The operators of nuclear power plants in Europe.

COMPETITIVE ASSESSMENT

52. The CMA has gathered evidence from the Parties, third-party competitors and customers, other competition authorities, and a number of government departments in order to assess whether the Merger would give rise to a realistic prospect of an SLC.

Vertical effects

53. Vertical effects may arise when a merger involves firms at different levels of the supply chain, for example a merger between an upstream supplier and a downstream customer or a downstream competitor of the supplier's customers.

54. Vertical mergers may weaken rivalry in affected markets, for example when they result in foreclosure of the merged firm's competitors. The CMA only regards such foreclosure to be anticompetitive where it lessens competition in the foreclosed market(s), not merely where it disadvantages one or more competitors.

55. The CMA's approach to assessing vertical theories of harm is to analyse: (a) the ability of the merged entity to foreclose competitors, (b) the incentive of it to do so, and (c) the overall effect of the strategy on competition. These conditions are cumulative; if the CMA considers that one is not met it may decide not to consider the other conditions.[59]

56. The CMA has focused its assessment on the following theories of harm:[60]

(a) input foreclosure in the supply of TGPs to nuclear reactor providers;

(b) customer foreclosure in the supply of TGPs to nuclear reactor providers; and

(c) customer foreclosure of steam turbine and generator servicing suppliers.

[59] CMA129, paragraph 7.10.
[60] The CMA notes that GE Steam is also active in the supply of pumps to nuclear power plants, and EDF (and its competitors) are customers of such pumps. However, in light of the Parties' de minimis shares in the sale and procurement of these pumps (for each of GE Steam and EDF [0-5]%) and the absence of any expressed concerns by any market participant, the CMA considers that there are no plausible competition concerns that could feasibly arise from this relationship. The relationship between the Parties in the supply of pumps is therefore not considered any further in this decision.

57. For completeness, the CMA has also considered the competitive effects of the Merger in relation to information exchange between the Parties, and in the nuclear defence sector.

58. As discussed in the frame of reference, the products and services supplied by the Parties are supplied on a global basis. However, the CMA is required to consider the impact of the Merger on competition within any market or markets in the UK. Given that the Parties' activities are global, the Merger is vertical in nature and that the relevant theories of harm centre on foreclosure of competitors, the CMA has considered the Merged Entity's ability to foreclosure rivals on a worldwide basis since any such foreclosure may harm competition in the UK. Focusing solely on the UK would not allow the CMA to properly assess whether the Merged Entity can, and is likely to, harm competitors that are not currently active in the UK but may compete in the UK in the future.

Input foreclosure in the supply of TGPs

59. As EDF is the only nuclear reactor provider that is currently developing nuclear power plants in the UK, the CMA assessed whether the Merger may result in the Merged Entity foreclosing EDF's rival nuclear reactor providers from entering the UK. This may take the form of partial foreclosure where GE Steam charges higher prices for or reduces the quality of its TGPs, or total foreclosure where GE Steam refuses to supply its TGPs at all.

60. The Parties submitted that via EDF's subsidiary, Framatome, its EPR design is the only available technology that is capable of operating at an output above 1500MW and therefore comprises the entire demand for corresponding TGPs at very high power.[61]

61. The Parties submitted that EDF competes against nuclear reactor providers at lower power levels, highlighting that EDF's 1500MW EPR reactor recently lost to Westinghouse's 1000MW AP1000 reactor in a tender in Poland.[62] The Parties also submitted that there are many alternative suppliers of TGPs below 1500MW, and that this is particularly the case for SMRs where other TGP suppliers are more [✂].[63] The Parties stated that in any case, TGPs typically account for less than 10% of the overall cost of a nuclear power plant.[64]

62. The Parties submitted they are not aware of any current or anticipated interest to enter the manufacture and supply of 1500MW and above nuclear reactors. They also submitted that there is no credible potential entry by EDF's competitors to provide reactors at 1500MW and above power levels given the specific conditions of

[61] FMN, paragraph 224.
[62] FMN, paragraph 227(b).
[63] FMN, paragraph 246 (a).
[64] FMN, paragraph 237(b).

demand (such as electricity grid capacity and site specifications), as well as the significant financial risk arising from the large upfront costs, particularly in view of the lower cost options such as SMRs.[65]

EDF's nuclear reactor competitors

63. The CMA considers that EDF competes with nuclear reactor providers active at all power levels. As discussed in paragraph 29, the UK government plans to use high power reactors and invest in SMRs to achieve its objectives, and so reactors active at all power levels are likely competing to be commissioned by the UK government.

64. Although it is too early to know who will compete to supply any additional high power or SMR nuclear reactors in the UK, the available evidence indicates that EDF will likely face various rival nuclear reactor providers. For example, Westinghouse, Korean Electric Power Corporation (**KEPCO**), [66] GE-Hitachi, MHI, and Doosan[67] are established providers, and all have nuclear reactor offerings between 1000MW and 1500MW. There are many potential providers of SMRs emerging as the industry develops, including SMR specialists such as UK-based Rolls Royce SMR or NuScale,[68] as well as well-established providers developing their own SMRs such as Westinghouse,[69] KEPCO[70] and GE-Hitachi.[71]

65. The following sections assess GE Steam's level of market power in the supply of TGPs. Evidence on GE Steam's level of market power varied between TGPs for high-power reactors and TGPs for SMRs, and as such the CMA has set out evidence on each separately below.

TGPs for high-power reactors (above 500MW)

66. The Parties submitted that GE Steam's competitors for TGPs for high-power reactors include Siemens, Doosan-Skoda, Toshiba, MHI, Shanghai Electric Power, Dongfang Electric Corporation, Power Machines, and Turboatom. These providers generally offer a range of TGPs across power levels.[72]

67. However, as discussed in paragraph 70, evidence from nuclear reactors providers and TGP providers indicated that Siemens, Doosan-Skoda, Toshiba and MHI are GE Steam's main competitors.[73]

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[65] FMN, paragraph 225 (a) to (c).
[66] FMN, Table 14.
[67] Annex A060 to the FMN, sheet one.
[68] FMN, paragraph 98 (b)(i).
[69] See AP300™ Small Modular Reactor (westinghousenuclear.com).
[70] See Small Modular Reactor | KEPCO.
[71] FMN, paragraph 110.
[72] FMN, paragraph 132.
[73] Note of a call with a third party; Third party responses to the CMA's questionnaire.

68. The CMA has estimated shares of supply for suppliers of high-power TGPs which have been awarded for reactors which are planned or under construction worldwide,[74] both including and excluding GE Steam's commercial partnerships.[75] On a cautious basis, the CMA has only included Doosan-Skoda, MHI, Toshiba and Siemens in its analysis as these are GE Steam's main competitors according to the Parties and which is consistent with third-party evidence.[76] The CMA estimates that GE Steam (excluding its commercial partnerships) has a similar market share to its competitors, with a share of [10-20]%, but a higher market share than its competitors when accounting for its commercial partnerships, with a share of [50-60]%.[77]

69. Although shares of supply can be a useful indicator of a supplier's position in the market, the CMA considers that in this case they may be less useful in determining the strength of the competitive constraint provided by GE Steam's competitors, given the infrequency of tender opportunities for TGP providers. For example, the CMA understands from the Parties that Siemens, which based on shares of supply has a low share (between [0-5]% and [0-5]% when including or excluding GE Steam's commercial partnerships respectively), is [✂] for TGPs for high power reactors against GE Steam[78] and has historically provided TGPs to nuclear power plants in various countries, which is not reflected in the share of supply data.[79]

70. Evidence from nuclear reactor providers and TGP providers indicated that there are a number of alternatives to GE Steam. Specifically, third parties identified Siemens, MHI, Toshiba, and Doosan-Skoda as GE Steam's main competitors.[80] AAEM (a Russian provider that GE Steam partners with) was also named by one competitor, [81] and another mentioned suppliers from China as other competitors without further explanation.[82]

71. The CMA considers that although every TGP customer has different requirements, and that some providers may not be suitable for all customers or vice versa, in broad terms providers are able to adapt their TGPs to meet specific requirements of customers. For example, [✂] submitted that it has the capability to respond to site-specific conditions and customer requests in order to supply steam turbines and

[74] Based on Parties' submissions and data from the International Atomic Energy Agency (**IAEA**) report 'Nuclear Power Reactors in the World' (**IAEA Reactor Report**). The IAEA is the International Atomic Energy Agency. It is an intergovernmental organization that, amongst other activities, gathers information on decommissioned, operating, under construction and planned nuclear power plants worldwide.
[75] GE Steam operates via AAEM and is active worldwide for the sale of conventional islands. It also partners with BHEL and DEC for TGPs for nuclear reactors in India and China respectively.
[76] Notes of calls with third parties.
[77] This may overstate the size of GE Steam as the CMA did not receive data on some competitor's commercial partnerships.
[78] FMN, Table 14.
[79] FMN, paragraph 180(c)(ii), footnote 190 and paragraph 187(b)(i).
[80] Note of a call with a third party; Third party responses to the CMA's questionnaire.
[81] Third party response to the CMA's questionnaire.
[82] Third party response to the CMA's questionnaire.

generators, and that although there are several differences in turbine design, [✂] and GE Steam can both offer steam turbines which meet customer requirements.[83]

72. Based on the above, the CMA considers that the evidence shows that there are sufficient alternatives to GE Steam for high-power TGPs in the UK such that the Parties will not have the ability to foreclose nuclear reactor developers competing with EDF. The CMA has therefore not assessed whether the Merged Entity would have the incentive to engage in foreclosure, or the effects of such foreclosure.

TGPs for SMRs (less than 500MW))

73. According to the Parties, [✂] of the TGP suppliers for high-power reactors (Siemens, [✂]) have developed or are developing TGPs for SMRs and compete with GE Steam.[84] Other suppliers who are not active in the supply of TGPs for high-power reactors, such as [✂], also compete with GE Steam to provide TGPs for SMRs.[85]

74. Although SMRs, and consequently the TGPs required for them, are an emerging market (such that there are only three SMRs planned or under construction worldwide), [86] competition to supply TGPs to SMRs is ongoing. For instance, according to the Parties, international tenders have occurred, with GE Steam engaged to supply TGPs for SMRs for [✂] in [✂],[87] [✂], and Siemens winning tenders to provide TGPs for other SMR projects in Canada and Argentina.[88]

75. Evidence from SMR developers indicated that there are a wide range of alternatives to GE Steam for TGPs for SMRs. For example, [✂] submitted that there are many other choices beside GE Steam.[89]

76. Based on the above, the CMA considers that the evidence shows that there are sufficient alternatives to GE Steam for TGPs for SMRs in the UK such that the Merged Entity would not have the ability to foreclose nuclear reactor developers competing with EDF. The CMA has therefore not assessed whether the Merged Entity would have the incentive to engage in foreclosure, or the effects of such foreclosure.

Customer foreclosure of TGP suppliers

77. [✂] raised concerns that post-transaction, EDF will no longer run impartial tenders when procuring TGPs, instead favouring GE Steam.[90] The CMA therefore assessed

[83] Third party response to the CMA's questionnaire.
[84] FMN, paragraph 143.
[85] FMN, paragraph 143 and footnote 120.
[86] According to the IAEA Reactor Report.
[87] FMN paragraph 136 (a).
[88] FMN, paragraph 143.
[89] Note of a call with a third party.
[90] Third party responses to the CMA's questionnaire.

the extent to which the Merged Entity could harm GE Steam's rival TGP suppliers by completely or partially foreclosing them from EDF as a customer. As EDF is the only nuclear reactor provider that is currently developing nuclear power plants in the UK, and it has [✂] used GE Steam for its UK reactors, and moreover the CMA considers TGP suppliers compete on a worldwide basis, the CMA assessed whether GE Steam's rivals could be harmed on a worldwide basis.

78. The Parties submitted that the Merged Entity would not have the ability to harm GE Steam's rivals as EDF has a very low share of supply ([0-5]% based on data from the International Atomic Energy Agency[91]) in the design and construction of nuclear reactors worldwide.

79. Third-party feedback indicated that it is difficult for TGP suppliers to supply EDF with TGPs given its specific requirements, and that GE Steam and EDF already work together closely.[92]

80. Given this evidence, the CMA considers EDF is not a sufficiently important customer to TGP suppliers such that the Merged Entity could harm their competitiveness by engaging in a foreclosure strategy against them. On this basis, the CMA considers that no plausible competition concerns would arise in relation to customer foreclosure of TGP suppliers, because the Merged Entity would lack the ability to foreclose rivals.

Customer foreclosure in the supply of servicing

81. The CMA assessed whether the Merger may result in the Merged Entity completely or partially foreclosing GE Steam's rival steam turbine and generator servicing providers from access to EDF as a customer. Customer foreclosure can occur where a merger involves one party that buys inputs from rivals of the other party, as the merged entity may restrict these rivals' access to this customer, which would in turn harm the rivals' competitiveness and therefore competition in the upstream market.[93]

82. As mentioned above, the CMA has assessed the customer foreclosure theory of harm for servicing of steam turbines in nuclear power plants in Europe and servicing of generators in nuclear power plants in Europe together, as assessing them separately would not change the outcome of its assessment.

83. The Parties submitted that EDF would not have the ability or incentive to foreclose GE Steam's rival steam turbine and generator servicing providers. This is because EDF is only one of a number of power plant operators in the UK, it sources [✂] of its

[91] FMN, paragraph 240(a).
[92] Note of a call with a third party.
[93] CMA129, paragraph 7.8(b).

conventional island servicing from GE Steam in the UK, and the Merger would not change this pattern of demand.[94]

84. Evidence from the Parties and third parties indicates that GE Steam competes with OEM and non-OEM service providers, which provide services to other OEMs' steam turbines and generators. This is because OEM service providers compete to service other OEM equipment. For example, in the UK, approximately [✂]% of GE Steam's servicing revenue is generated from customers of equipment from OEMs other than GE Steam and third party feedback indicated that while the OEM is often selected as the service provider for a steam turbine or generator, it may not be if it is not price competitive.[95]

85. GE Steam competes with a number of servicing providers who have, or could have, the ability to service the steam turbines or generators of nuclear power plants in Europe. In the steam turbine servicing market, GE Steam's competitors include Siemens, Sulzer, Toshiba, MHI and a range of smaller participants. For the generator servicing market, GE Steam's competitors include Siemens, Ansaldo, Jeumont Electric, Sulzer, Toshiba and other participants. Broadly, the CMA understands that providers of steam turbine and generator servicing offer their services on a regional basis with teams based in that region, rather than using worldwide teams. For example, GE Steam's servicing business is organised by region (eg [✂] etc) and its resources are located in each of those regions.[96]

86. As such and on a cautious basis, the CMA has focused its assessment of the customer foreclosure theory of harm on the provision of steam turbine and generator servicing to nuclear power plants in Europe, that is foreclosing the European servicing operations of GE Steam's rivals. However, as will be discussed, the CMA also recognises that servicing suppliers may have a wider set of customers.

87. Accordingly, the CMA has considered shares of supply based on the number of nuclear power plants currently operating in Europe, and estimates that EDF has a [50-60]% share.[97] EDF's competitors have much smaller shares, as its next largest competitor, Czech Power Co., has a share of [0-5]%, followed by Slovenské Elektrárne with [0-5]%, Engie Electrabel with [0-5]%, Paks Nuclear Power Plant Ltd with [0-5]%, followed by a tail of smaller competitors.

88. Based on these estimates, EDF is a significant nuclear power plant operator in Europe. Nevertheless, the available evidence indicates that there are other nuclear

[94] FMN, paragraphs 369(c) and 371.
[95] Third party responses to the CMA's questionnaire.
[96] RFI5 response, paragraph 1.4.
[97] CMA analysis, based on Parties' submissions and the IAEA's Report on Nuclear Power Reactors in the World 2022, Table 14.

power plants that GE Steam's rivals can service and that these rivals are not dependent on EDF as a customer.

89. Third parties did not raise significant concerns regarding being able to access EDF as a customer post-Merger. Some servicing suppliers submitted that as a result of the Merger, EDF may be unlikely to acquire steam turbine and generator servicing from GE Steam's rivals which would impact competition.[98] Nevertheless, the CMA understands that these concerns came from third parties which do not currently supply services to EDF, and as a result, they would not be weaker competitors or worse off as a result of the Merger.

90. In addition, the CMA considers that GE Steam's rivals are likely to have customer options outside of nuclear power plant operators. The Parties submitted that non-nuclear power plants such as coal-fired plants, combined cycle gas turbine plants and biomass plants, have very similar conventional islands, and servicing requirements, to nuclear power plants.[99] This was supported by third party feedback, although one third party did submit that servicing conventional islands in nuclear power plants may require some 'add-ons' or different time scheduling.[100] Further, all servicing providers that provided third party feedback indicated that they supply servicing to steam turbines and generators in non-nuclear power plants.[101] Over half of all servicing supplier respondents confirmed that servicing steam turbines and generators in non-nuclear power plants comprises a larger part of their businesses.[102]

91. Based on the evidence above, the CMA considers that EDF is not a crucial customer for GE Steam's rivals and the Merged Entity would have no ability to harm the overall competitiveness of GE Steam's rivals in the supply of steam turbine and generator servicing.

Information sharing from EDF to GE Steam

92. One market participant submitted to the CMA that EDF may share information about third party TGPs or steam turbine and generator servicing with GE Steam, and that this would undermine competition in the market by giving GE Steam an unfair advantage to commercially sensitive information.[103] The market participant did not specify the mechanism through which GE Steam would gain a competitive advantage. The CMA nonetheless assessed the potential concerns that might arise from such a strategy. Regarding future tenders, the CMA considers that any information shared from past (or current) tenders is likely to be site-specific and unlikely to contain any competitively meaningful forward-looking information for

[98] Third party responses to the CMA's questionnaire.
[99] FMN, paragraph 268.
[100] Third party responses to the CMA's questionnaire.
[101] Third party responses to the CMA's questionnaire.
[102] Third party responses to the CMA's questionnaire.
[103] Third party response to the CMA's questionnaire.

tenders which would, by their very nature, be in relation to different sites.[104] On this basis, the CMA considers that no plausible competition concerns would arise in relation to information sharing from EDF to GE Steam.

Tying strategies in defence markets

93. Both GE Steam and EDF are active in adjacent defence markets, although unlike in civil nuclear, both are input suppliers in these adjacencies and neither is the customer. GE Steam supplies turbines for nuclear powered submarines and EDF supplies forged parts for the nuclear boiler rooms on nuclear powered submarines.[105] EDF is also active in other defence markets aside from components for nuclear submarines.[106]

94. The CMA carried out significant evidence-gathering in respect to the Parties' defence-related activities.[107] Due to the nature of demand within sectors where the Parties are active, in particular that the products supplied by the Parties are not acquired together the CMA considers that there are no plausible foreclosure mechanisms that the Merged Entity could engage in that would lessen competition post-Merger.

Conclusion on non-horizontal effects

95. For the reasons set out above, the CMA found that the Merger does not give rise to an SLC as a result of non-horizontal effects in relation to any market or markets in the UK.

Conclusion on competitive assessment

96. For the reasons set out above, the CMA has found no realistic prospect of an SLC as a result of the Merger.

Decision

97. Consequently, the CMA does not believe that it is or may be the case that the Merger may be expected to result in an SLC within a market or markets in the UK.

98. The Merger will therefore **not be referred** under section 33(1) of the Act.

Tim Geer
Director

[104] Parties' response to the CMA's request for information dated 21 April 2023, paragraph 1.7(a).
[105] FMN, paragraphs 435 and 436.
[106] FMN, paragraph 447.
[107] The CMA contacted several third-parties active in supplying the defence sector, and also liaised with relevant government contacts with oversight and visibility into the UK's nuclear defence-related activities.

Competition and Markets Authority
25 May 2023

[i] References to ‘decommissioned’ at paragraph 27 should be read as ‘closed’.